

Headquarters U.S. Air Force

Integrity - Service - Excellence

Partnering with Industry on System Safety & MIL-STD- 882D

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What is System Safety?

“The application of engineering and management principles, criteria, and techniques

to achieve acceptable mishap risk

within the constraints of operational effectiveness and suitability, time and cost

throughout ALL phases

of the system life cycle.”

- MIL-STD-882D



- **Initial drivers for change to MIL-STD-882**
- **Initial partnership to develop MIL-STD-882D**
- **Barriers to implementation of MIL-STD-882D**
- **Renewed emphasis on System Safety**
- **Renewed partnership to improve
implementation**



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Initial Drivers for Change

- **DoD policy to go to performance-based Standards**
 - **DSIC rejected 1993 MIL-STD-882C as too prescriptive**
 - **Defined "how to" in long list of System Safety tasks**
 - **Focused on producing reports, not reducing risks**
 - **DSIC directed creation of performance-based standard practice**
- **1996 policy decision to integrate Environment, Safety, and Occupational Health (ESOH) into Systems Engineering (SE)**
 - **Purpose -- more effectively and efficiently minimize ESOH risks and costs during system development**
 - **Methodology -- use System Safety risk management**



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Initial Partnership

- **Govt & Industry team rewrote 1993 MIL-STD-882C**
 - **GEIA G-48 System Safety Committee**
 - **Representatives from Services, FAA, NASA, and Coast Guard**
 - **Reps from most defense industry corporations**
- **AF published MIL-STD-882D 10 Feb 00**
 - **Eliminated overly prescriptive requirements**
 - **Added guidance on how to apply risk management to Environmental issues**
 - **Approved for use on all DoD contracts without restriction**
 - **Defined WHAT required -- 8 steps to integrate ESOH into SE**



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Initial Partnership

Risk Assessment and Risk Acceptance MIL-STD-882D & DoDI 5000.2, E7

PROBABILITY LEVELS	SEVERITY CATEGORIES			
	I CATASTROPHIC	II CRITICAL	III MARGINAL	IV NEGLIGIBLE
(A) Frequent	1	3	7	13
(B) Probable	2	5	9	16
(C) Occasional	4	6	11	18
(D) Remote	8	10	14	19
(E) Improbable	12	15	17	20

HIGH(CAE)

SERIOUS (PEO)

MEDIUM (PM)

LOW (PM)



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Barriers to Implementation

- **System Safety community more comfortable with 882C**
- **Lack of formal training on 882D implementation for**
 - **System Safety Engineers**
 - **Systems Engineers**
- **Lack of emphasis in Defense Acquisition policy on**
 - **System Safety**
 - **Systems Engineering**
- **Lack of Senior Leadership attention**



Renewed Emphasis

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■ May 2003 SECDEF Memo

- Established goal of 50% reduction in mishap rates**
- Led to creation of Defense Safety Oversight Council**
 - Joint Chiefs of Staff & Undersecretaries of the Services**
 - Nine supporting Task Forces (TF)**

■ DSOC Acquisition and Technology Programs (ATP) TF focused on improving System Safety

- Chair: Mr. Mark Schaeffer, USD (AT&L) Director of Systems Engineering (SE)**
- TF linked efforts to increase emphasis on System Safety to revitalization of Systems Engineering (SE)**



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Renewed Emphasis

■ 23 Sep 04 USD (AT&L) Defense Acquisition

System Safety memo requires ALL DoD PMs to:

- Integrate ESOH into SE using System Safety**
- Use MIL-STD-882D as the System Safety methodology**
- Incorporate ESOH integration strategy into the new Systems Engineering Plan (SEP)**
- Address ESOH risk acceptance decisions in technical and program reviews**



Renewed Partnership

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■ DSOC ATP TF Initiatives with Industry

- Oct 04 NDIA SE Conference Government & Industry Senior Level Panel on System Safety**
- Nov 04 PEO/SYSCOM Conference Senior Government Panel on System Safety**

■ NDIA SE Division creation of System Safety Committee

- Focus on implementation of 23 Sep 04 USD (AT&L) memo**
- Industry & Government Co-Chairs**
- Establishing links to System Safety Society and G-48**



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Renewed Partnership

- **Defense Acquisition University (DAU) Continuous Learning Module (CLM) -- System Safety in Systems Engineering (SSSE)**
 - **Based on MIL-STD-882D**
 - **Subject Matter Experts (SMEs) from each service & industry**
 - **Feb 05 peer review of by government & industry practioners**
 - **ECD Apr 05; available to both industry & government**
 - **Maps System Safety activities into the SE V-Model**
 - **Maps government and industry relationships**



Summary

- **Industry & government partnered to initially develop MIL-STD-882D, Standard Practice for System Safety**
 - Performance-based document that defines what, not how
 - Provides process for integrating ESOH considerations into SE
- **Industry & government partnering again to enhance implementation of 882D through**
 - 23 Sep 04 USD (AT&L) System Safety policy memo
 - NDIA SE System Safety Committee
 - DAU System Safety in Systems Engineering course